

James Clerk Maxwell (1831-1879)

Maxwell's equations are familiar to all undergraduate students of electronics. In fact Maxwell's work is of so much significance that he is often ranked as next to Newton for the fundamental nature of his contributions. His work on electricity and magnetism constitutes his supreme achievement—a work which led to advances that have transformed the modern world. It involved the extension of Faraday's ideas and their interpretation in terms of a mathematical notation. He postulated that a changing electric field should lead to displacement current in ether,—a concept which made possible the e.m. theory

Maxwell was born at Edinburgh on November 13, 1831. His father was a lawyer of wide reputation but he had some interest in science. Maxwell, being the only child of his father, was very dear to him. At the age of ten, he was sent to Edinburgh Academy. The boy was very shy. His father used to take him to several meetings and societies to cure him of his shyness. He had been showing his brilliance from the age of thirteen and within two years, the boy made first contribution to science by drawing some ovals, which were so remarkable that Professor Forbes brought them before the Royal Society.

At the age of sixteen he entered the University of Edinburgh and continued researches in Electricity and Magnetism. In 1850, he went to Cambridge for higher studies and became a second Wrangler and obtained a Mathematical Tripos. In 1851, he gave his famous Corkscrew Rule.

Maxwell's attempt at an e.m. theory of light, established the velocity of propagation of a signal along a wire as the ratio of the electromagnetic to electrostatic unit of charge. His theory was confirmed by experiments of H. Hertz later, when he demonstrated the production of electromagnetic waves.

Maxwell also made important contributions in other branches of physics: viz. quantitative theory of colour vision, kinetic theory of gases, rings of Saturn etc. His publications include two books, viz. *Theory of Heat* (1872) & *Treatise on Electricity and Magnetism* (1873).

J.C. Maxwell became the first Cavendish Professor of Physics—he designed the laboratory, recruited initial staff and it was to Maxwell's genius that the Laboratory achieved eminence by turn of the century. He died after illness on Nov. 5, 1879.